

AMENDMENTS TO THE CLAIMS

Claims 1-10 (Cancelled).

11. (New) A Coriolis flowmeter comprising:

a casing resistant to bending and torsion;

a stationary member fixed within said casing, said stationary member having a rectangular shape when viewed from above and being formed as a flat plate;

a pair of block-shaped support portions mounted and fixed to said stationary member;

a flow tube including a straight portion and a pair of leg portions, each of said leg portions being connected to a respective end of said straight portion and oriented in a vertical direction, said flow tube being supported by said pair of support portions at respective ends of said pair of leg portions where a flow port is located, said flow tube having a symmetrical shape with respect to a vertical first axis parallel to said pair of leg portions;

a first drive device arranged at a center position of said straight portion of said flow tube so as to be located on said vertical first axis, said first drive device being operable to alternately drive said flow tube in a rotating direction around a horizontal second axis parallel to a horizontal axis connecting positions at which said support portions support said flow tube, said first drive device including one of a coil and a magnet on said flow tube and the other one of a magnet and a coil on said stationary member;

a pair of vibration detecting sensors symmetrically mounted with respect to said first drive device, each of said vibration detecting sensors being located at a respective one of a right side and a left side of said first drive device to detect a phase difference proportional to Coriolis forces acting on said flow tube; and

a pair of second drive devices symmetrically mounted with respect to said first drive device, each of said second drive devices being located at a respective one of said right side and said left side of said first drive device in a lateral row along said straight portion of said flow tube, said pair of second drive devices being operable to alternately drive said flow tube in the rotating direction in phase around said horizontal second axis, each of said second drive devices

including one of a coil and a magnet on said flow tube and the other one of a magnet and a coil on said stationary member, said pair of second drive devices being driven in a reverse phase with respect to said first drive device so as to make a bending vibration with a vibration beam in a tertiary vibration mode.

12. (New) The Coriolis flowmeter of claim 11, wherein said pair of second drive devices are arranged near apexes of a rising section and a falling section of said straight portion of said flow tube and along a flow path center axis of said flow tube.

13. (New) The Coriolis flowmeter of claim 12, wherein said first drive device and said pair of second drive devices are arranged and designed such that:

when a repelling action is generated by said first drive device, a force acts on the center position of said straight portion of said flow tube in a direction away from said stationary member, and an attracting action is generated by said second drive devices to cause a force acting in a direction in which said flow tube is moved towards said stationary member near the apexes of the rising section and the falling section of said straight portion of said flow tube;

when an attracting action is generated by said first drive device, a force acts on the center position of said straight portion of said flow tube in a direction towards said stationary member, and a repelling action is generated in said second drive devices to cause a force acting in a direction in which said flow tube moves away from said stationary member near the apexes of the rising section and the falling section of said straight portion of said flow tube; and

said first drive device and said pair of second drive devices are driven in opposite phases, and said flow tube is alternately driven in the rotating direction due to the opposite phases at the center position of said straight portion of said flow tube and near the apexes of the rising section and the falling section of said straight portion of said flow tube to make the bending vibration with the vibration beam in the tertiary vibration mode.

14. (New) The Coriolis flowmeter of claim 11, wherein said pair of vibration detecting sensors are arranged at a position deviated from a position at which a node is to be generated between a portion of said flow tube whereat an inflow port side second drive device is mounted and a portion of said flow tube whereat said first drive device is mounted, and at a position deviated from a position at which a node is to be generated between a portion of said flow tube whereat an outflow port side second drive device is mounted and a portion of said flow tube whereat said first drive device is mounted.

15. (New) The Coriolis flowmeter of claim 11, wherein said casing comprises:
a main body has an open upper surface and a U-shaped section, an inflow port side connecting portion and an outflow port side connecting portion being connected to a respective end of said main body in a longitudinal direction, said inflow port side connecting portion and said outflow port side connecting portion being formed so as to establish communication between an interior and an exterior of said main body; and
a pressure-resistant case having an arcuate-shaped outer periphery and an opening portion mounted to a top surface of said main body, said case having a U-shaped sectional shape and being fixed to said main body.

16. (New) The Coriolis flowmeter of claim 15, wherein said main body is bilge-shaped.

17. (New) The Coriolis flowmeter of claim 15, wherein said case is thin-walled.

18. (New) The Coriolis flowmeter of claim 11, wherein said stationary member is arranged parallel to a plane defined by said straight portion of said flow tube and said pair of leg portions of said flow tube.

19. (New) The Coriolis flowmeter of claim 11, wherein said flow tube is only a single unitary flow tube, and said flowmeter comprises no additional flow tube.

20. (New) The Coriolis flowmeter of claim 11, wherein said flow tube is gate-shaped.

21. (New) The Coriolis flowmeter of claim 11, wherein each of said pair of vibration detecting sensors is mounted on a respective one of said pair of leg portions of said flow tube between an end of said respective one of said leg portions and an adjacent one of said pair of second drive devices.

22. (New) The Coriolis flowmeter of claim 11, wherein each of said pair of vibration detecting sensors is mounted on said straight portion of said flow tube between an adjacent one of said pair of second drive devices and said first drive device.

23. (New) The Coriolis flowmeter of claim 11, wherein each of said pair of leg portions is oriented so as to extend at a right angle from a respective end of said straight portion of said flow tube.